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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,076	07/11/2006	Stephen Lee	Becker-1016 US	5795
7733	7590	02/18/2009		
WALKER & JOCKE, L.P.A. 231 SOUTH BROADWAY STREET MEDINA, OH 44256				
EXAMINER				
NGUYEN, COLETTE B				
ART UNIT		PAPER NUMBER		
1793				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/597,076

**Applicant(s)**

LEE ET AL.

**Examiner**

COLETTE NGUYEN

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,7-8,10-12,18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8,10-12 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Status of the application***

Claim 1 amended, claims 6, 9 and 13-17 canceled. Claims 1-5, 7-8, 10-12 and 18-20 are pending and now presented for examination.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1, 5, 7-8, 10-12 and 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanse et al. (US 6,367,671) in view of Hammond et al. (GB 1,032,291).

5. **Regarding claim 1.** Hanse discloses a design of an elongated stopper device with improvement of the seal, comprising an elongated body of refractory material with an axial borehole extending from its upper end to its lower end, the body of refractory material is provided with means for introducing inert gas into the metal bath. The body of refractory material also has means for attaching a metal rod, either by cylindrical bushing (Hanse, Fig 1, means 5) or an elongated cylindrical insert (Hanse, Fig. 2, sleeve 14). However, Hanse is silent about the details of the anchor features beside the good sealing feature to prevent gas leakage. Hammond, on the other hand, discloses details of the graphite seal and a design that creates a minimum contact of the metal rod with the surface of the bore by providing longitudinally ribbed designed with bush rings or other projections in the sleeve bores, such as bosses or interrupted rings at intervals along the sleeve bore. (Hammond, page 2, ln 55-75) These "spacers" reduce transmission of heat to the metal rod, and provide support and anchor of the rod inside the borehole. Both do not disclose the precise circumferential degree of extension of 20 to 450 of the inner wall of the bore hole, however, It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Hammond of ribs or interrupted rings (360°) at intervals along the sleeve bore with the

teaching of Hanse of the one -piece stopper rod with gas tightness to provide a stopper that is easy to make, easy to assemble with improvement of sealing and avoid differential stresses between the ceramic body and the metal rod through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranged involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPAP1980). In this case, Hammond discloses an anchor with disc like structure (which has 360°) such as longitudinal ribs or interrupted rings at intervals, which may be convexly arcuate cross-sectional shape or concavely arcuate cross sectional shape. The claimed "sheet liked anchor is no other than a cut out ring. Details (a-d ) are encompassed by Hanse in view of Hammond. For Detail (f), Hanse discloses " *if a metal insert having a threaded axial internal borehole anchored in the body of refractory material..*". Hanse (Col 5, ln 10-20). The claimed feature of the anchor has been anticipated by the teachings of Hanse.

6. Regarding claim 2. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein the stopper has a partially threaded sectional its inserted end (see fig 1).

7. Regarding claim 3. Hanse in view of Hammond discloses a stopper device according to claim 1, including a sealing member being arranged adjacent to said anchor.(col 4, ln23 "the meta rod 6 has a collar 12 with annular sealing surface facing the annular sealing surface 10 of the borehole of the body of refractory material so as to create a seal against gases" and col 4, ln 27, " The sleeve 14 is fitted on the rod 6 and maintains the gaskets 11 and 11' under compression"). The key disclosure here is the adjacent proximity of the seal and the

anchor and a design wherein the sealing joint is not in contact with the molten metal.(Hanse, col 3, ln 25-27)

8. Regarding claims 4 and 5. Hanse in view of Hammond discloses a stopper device according to claim 3. wherein the seal is cylindrical and is arranged in adjacent to the anchor (col 4, ln23 *"the meta rod 6 has a collar 12 with annular sealing surface facing the annular sealing surface 10 of the borehole of the body of refractory material so as to create a seal against gases"* and col 4, ln 27, *" The sleeve 14 is fitted on the rod 6 and maintains the gaskets 11 and 11' under compression"*), The sleeve (14) is arranged along the a circumferential wall of the bore hole (6). The sleeve (14) is used as sealing and anchor in Hanse which extends radially into the bore hole and longitudinally along a certain length. To receive said rod in a thread ably manner (Hanse, Col 5, ln 11-18 and fig 2).

9. Regarding claim 7. Hanse in view of Hammond discloses a stopper device according to claim 3, wherein said rod has a smaller width at its part which first enters said sealing member than at its part on top.( Hanse, Fig 1 )

10. Regarding claim 8. Hanse in view of Hammond discloses a stopper device according to claim 3 wherein the seals are graphite (Col.4, ln.13).

11. Regarding claims 10 and 11. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein the anchors are bush rings at intervals along the sleeve bore (Hammonds page 2, ln 14-21 and ln 66-79). As imaginary helical patter is not disclosed by Hammond, it would have bee obvious for one of ordinary skill in the art

at the time of the invention to space as such to provide a better longitudinal contact of the rod for a secured anchor.

12. Regarding claim 12. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein "bosses or interrupted rings at intervals along the sleeve bore It would have been obvious for one of ordinary skill in the art at the time of the invention to use snap ring which is also a type of ring as bush rings.

13. Regarding claim 18. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein the anchor is made of metal. (Hanse, col.4, In 43-55)

14. Regarding claim 19. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein the rod has an axial bore (Col 4, In 2, "*the metal rod 6 also has an axial borehole 7 that passes through it...*")

15. Regarding claim 20. Hanse in view of Hammond discloses a stopper device according to claim 1 wherein the anchors are bush rings at intervals along the sleeve bore (Hammonds page 2, In 14-21 and In 66-79).As the main goal of the use of the rings is to provide a secure attachment with minimum thermal conducting contact, therefore, the angle of the ring with respect to the plane perpendicular is not as important. It would have been obvious for one of ordinary skill in the art at the time of the invention to space at an angle of 1- 5° as such to provide a better longitudinal contact of the rod for a secured anchor as taught by Hammond at intervals.

***Response to Arguments***

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

1. Regarding the arguments of 103 (a). Hammond clearly teaches that the anchors are fixed within the stopper body and projecting radially into sail bore hole, (see fig 4, and fig 5 of Hammond and page 2, ln 13-15). Furthermore, it would be a good motivation for one of ordinary skill in the art at the time of the invention to combine the teaching of Hanse of improved seals with Hammond of using rings and modify the rings by installing in an angle as the rings provide minimum conductive contact therefore less stress.

***Conclusion***

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on (571)-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/  
Examiner, Art Unit 1793

CN  
February 15, 2009

/Melvin Curtis Mayes/  
Supervisory Patent Examiner, Art Unit 1793